

# Study on Limnological Parameter and Ichthyofaunal Biodiversity in Putka Reservoir of Sarangarh District Raigarh, Chhattisgarh

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## ABSTRACT

Biodiversity is the variability and variety of organism on planet the earth which is a mega ecosystem. Biodiversity can be observed at gene level, species level and ecosystem level. First life was originated in the water and first organism was also aquatic so water is called as life, water cover 71% of earth. Water is a important and essential abiotic factor of all kinds of ecosystems and also forms the habitat for enormous variety of organism in other words water form the biggest ecosystem, the aquatic ecosystem of the biosphere. The aim of the present study to observe Ichthyofaunal biodiversity in Putka reservoir. Investigation were undertaken during July 2020 to June 2021 in putka reservoir District Raigarh, Chhattisgarh, India at the time of study the fish sample were collected with help of local fishermen by using different types of nets and crafts. The fish sample were fixed in 10% formalin solution and kept in containers then transported to laboratory for further studies, identification of fishes have been done. In this study total number of 19 fish species of the 10 genera have been identified which are including to 06 families of 04 orders namely Cpriniformes, Perciformes, Clupeiformes and Beloniformes. The order Cypriniformes was the most dominant group representing 14 species. Out the 19 species, 14 species are belonging to Cypriniformes (8 species of family cyprinidae, 2 of Siluridae, 04 of Bagiridae) 2 species are belonging to order perciformes, 1 species of order Beloniformes and 2 species are belonging to clupeiformes.

**Key words:** Putka, Reservoir, Ichthyofaunal, Biodiversity, Raigarh District, Nets, Conservation.

## Introduction

The term Biodiversity is use for the variability and variety of plants, animals and microorganisms on planet earth which is a mega ecosystem. India is one of the 17 mega diverse countries of the world with only 2.5% of the land area but its biodiversity is 11% of worlds biodiversity. In Chhattisgarh there is no proper record of fish fauna is available especially reservoir fish fauna so we decided to study Piscean

biodiversity of Putka reservoir of Sarangarh District Raigarh Chhattisgarh India. Raigarh District is one among 28 Districts of Chhattisgarh state, India. It is Located at Latitude-21.8, to Longitude-83.3. Raigarh District is sharing border with Janjgir – champa District to the west, Jashpur District to the North, Bargarh District the south. It is sharing Border with odisha State to the South, Raigarh District occupies an area of approximately 6530 square kilometers. It is in the 293 meters to 220 meters elevavation range.



**Study of Limnological parameter of dam water -**

The Limnological properties of Dam water were analyzed according to the Standards Method given by APHA (2005). During the Study period following water parameter were Study which was shown through Table 1.

**Results and Discussion**

The recent work has been carried out in the year 2020-2021 at Putka Reservoir District Raigarh C.G.

**Table 1.** Physico - Chemical Parameters of Putak Reservoir

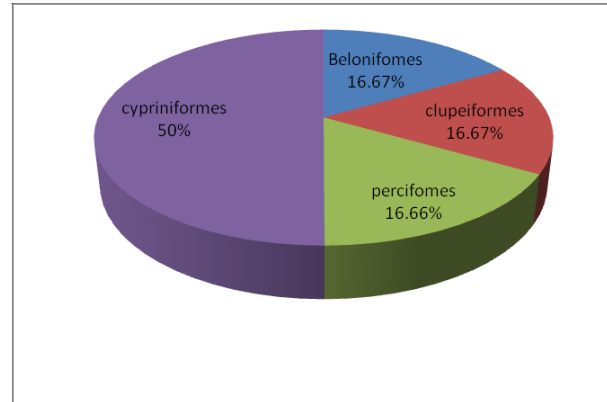
| SN. | Parameter              | Unit  | Method of testing                |
|-----|------------------------|-------|----------------------------------|
| 01  | pH                     | pH    | pH meter                         |
| 02  | Water Temperature      | pC    | Thermometer                      |
| 03  | Turbidity              | NTU   | Turbidity meter                  |
| 04  | D .O.                  | Mg/l  | Winkler’s iodometric method      |
| 05  | B.O.D.                 | Mg/l  | Titrimetric method               |
| 06  | Total alkanity         | Mg/l  | Titrimetric method               |
| 07  | Total Hardness         | Mg/l  | Titrimetric method               |
| 08  | Ca                     | Mg/l  | Titrimetric method               |
| 09  | Depth                  | Meter | Straight rod calibrated in meter |
| 10  | C.O.D.                 | Mg/l  | Titration Method                 |
| 11  | Atmosphere temperature | °C    | Thermometer                      |

During the entire study period a total number of 19 fish species of the 10 genera has been identified which are including to o6 families of 04 orders namely cypriniformes, perciformes, ciupeiformes and beloniformes. The order cypriniformes was the most dominant group representing 14 species out of the 19 species are belonging to cypriniformes (8 species of family cyprinidae, 2 of siluridae, 4 of bagridae ) 2 species are belonging to order perciformes, 1 spe-

**Table 2.** Physico-Chemical Parameter of Putaka Reservoir

| S. N. | Parameters             | Minimum | Maximum | Mean |
|-------|------------------------|---------|---------|------|
| 1     | Water Temperature (°C) | 16      | 40      | 26.5 |
| 2     | pH                     | 7       | 9       | 7.5  |
| 3     | B.O.D.                 | 4       | 13      | 9    |
| 4     | C.O.D.                 | 12      | 28      | 20   |
| 5     | Conductivity ( cm)     | 308     | 800     | 554  |
| 6     | Turbidity (NTU)        | 17      | 302     | 159  |
| 7     | Total alkanity         | 80      | 240     | 160  |
| 8     | Total Hardness         | 7o      | 120     | 95   |
| 9     | Depth                  | 8       | 30      | 19   |
| 10    | Ca                     | 7       | 45      | 26   |
| 11    | Atmosphere temperature | 11      | 45      | 28   |
| 12    | Cl                     | 28      | 82      | 55   |

cies of order beloniformes and 2 species are belonging to clupeiformes. List of the fishes collected and identified from the Putka Reservoir has been shown in Table 2.



**Photoplate 1.** Pie-diagram showing percentage contributing of families to the order

**Conclusion**

The present investigation provides us base line data for further studies about this reservoir ecosystem. As well as this study provides information about the fishes found in this water body and makes people aware for the conservation of the fish biodiversity of this reservoir.

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**Table 3.** List of fishes recorded in Putka Reservoir July 2020 to June 2021

| Order         | Family         | Genus and species            | Local Name     | IUCN Status              | Commercial importance |    |    |
|---------------|----------------|------------------------------|----------------|--------------------------|-----------------------|----|----|
| CYPRINIFORMES | CYPRINIDIAE    | <i>Labeo rohita</i>          | Rohu           | LC                       | FF                    |    |    |
|               |                | <i>Labeo gonius</i>          |                | LC                       | FF                    |    |    |
|               |                | <i>Labeo calbasu</i>         |                | LC                       | FF/OR                 |    |    |
|               |                | <i>Labeo baggut</i>          |                | LC                       | FF                    |    |    |
|               |                | <i>Labeo fimbrecultus</i>    |                | LC                       | FF                    |    |    |
|               |                | <i>Catla catla</i>           | Bhakhur mrigal | VU                       | FF                    |    |    |
|               |                | <i>Cirhinus mrigala</i>      | mirgal         | LC                       | FF                    |    |    |
|               |                | <i>Cyprinus carpio</i>       | Komalkar       | VU                       | FF                    |    |    |
|               |                | Cypriniformes                | Siuridae       | <i>Ompak bimaculatus</i> | Baliya                | VU | FF |
|               |                |                              |                | <i>Wallago attu</i>      | Padhina               | NT | FF |
| Cypriniformes | bagriridae     | <i>Mystus seenghala</i>      | Singhi tengna  | LC                       | FF                    |    |    |
|               |                | <i>Mystus aor</i>            | Singhi         | LC                       | FF                    |    |    |
|               |                | <i>Mystus vittaus</i>        | Desi tengna    | LC                       | FF                    |    |    |
|               |                | <i>Mystus blakemish</i>      |                | LC                       | OR                    |    |    |
| Perciformes   | centro pomidae | <i>Chanda ranga</i>          | Chandari       | LC                       | OR                    |    |    |
|               |                | <i>Chanda nama</i>           | chandeni       | LC                       | OR                    |    |    |
| Clupeiformes  | Notopteridae   | <i>Notopterus chitala</i>    | Chital         | LC                       | FF/OR                 |    |    |
|               |                | <i>Notopterus notopterus</i> | Chital         | LC                       | FF/OR                 |    |    |
| Beloniformes  | Belonidae      | <i>Xenentodon cancila</i>    | Bami           | LC                       | OR                    |    |    |

LC = Least concern, OR=ornamental fish, VU=Vulnerable, NT=Near threatened, FF=Food fish.

**Table 4.** Species diversity of fishes in Putka Reservoir (2020-21)

| S.N.  | Order         | Family        | Number of fish species |
|-------|---------------|---------------|------------------------|
| 01    | Cypriniformes | Cyprinidae    | 08                     |
|       |               | siluridae     | 02                     |
|       |               | Bagridae      | 03                     |
| 02    | Perciformes   | Centropomidae | 02                     |
| 03    | Clupeiformes  | Notopteridae  | 02                     |
| 04    | Beliniformes  | Belonidae     | 01                     |
| Total | 04            | 06            | 19                     |

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